polyvinyl alcohol sponge, thus obviating the need for further intervention. Using this method of intraoperative sacogram and aneurysm packing, we have reduced our type 2 endoleak rate from 9% to 1.3% (at completion of 2-year follow-up in 149 patients using our original, absorbable thrombogenic agent, Spongostan).[3]

The results in Dr Baum's article have ignited further interest in intrasac embolization and aneurysm packing; however, we agree that the material of choice should be carefully chosen.

Our method of packing the aneurysm sac was originally only applicable to uniiliac devices. It was feared that with bifurcated devices a large sheath would be required to be advanced between an iliac limb and the common iliac artery. More recently, we have devised a method of packing an aneurysm sac after bifurcated endovascular repair. Using smaller "bullets" of polyvinyl alcohol sponge, we have decreased the diameter of the introducer sheath to 11F and thus reduced the likelihood of injury to the iliac artery or disruption of the endograft limb.

Robert Hinchliffe
B. R. Hopkinson

Department of Vascular and Endovascular Surgery
University Hospital
Nottingham, United Kingdom

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Regarding "A comparison of para-anastomotic compliance profiles after vascular anastomosis: Nonpenetrating clips versus standard sutures"

Recently, several articles have appeared reporting the feasibility of using nonpenetrating VCS clips for vascular anastomosis, as well as the reduced anastomotic times with clips when compared with conventional sutures. However, there are very few articles that describe the effects of the clips on the vessel wall layers in detail. I would, therefore, like to congratulate Dr M. S. Baguneid and associates on their paper (J Vasc Surg 2001;33:812-20), in which they show that para-anastomotic compliance profiles are less reduced when using clips compared with sutures. It is concluded that this may lead to a reduced risk of anastomotic intimal hyperplasia in the longer term. Unfortunately, they failed to show any results of intimal thickness measurements and only gave us the description of what was seen in macroscopic view.

In a series of pig carotid experiments, we showed the effects of the same clips on the vascular endothelium.[1] It was found that endothelial relaxatory responses at the site of the anastomosis, as determined by adding pharmacological agents, remained better preserved with clips than with sutures. Scanning electron microscopy confirmed the better preservation of endothelial architecture after adding clips. To correlate these endothelial findings with any possible influence on the intimal layer, we quantified both intimal and media thickness and area of the same specimen with the aid of video morphometry. The degree of intimal hyperplasia was not reduced at clipped anastomotic sites compared with sutured ones. Similar findings were reported by Caiati et al.[2] We suggested that, in our study, this might be the result of a comparison between a continuous (suture) and discontinuous (clip) anastomosing technique. In our experiments, we used nonanastomotic vessel segments as a control group, and, unlike Baguneid et al, we did not carry out the same experiments with interrupted sutures. In their study, differences in loss of compliance, as well as the total compliance mismatch across anastomoses, were most prominent when a continuous technique was compared with an interrupted technique (either suture or clip). There were no significant differences between interrupted sutures and clips. This may further support our previous hypothesis, that in fact the beneficial effects of an interrupted anastomosis, regardless of which material it is made of or if it is penetrating or not, have been measured. Further experiments will be needed to define more precisely the influence of the clips on the occurrence of intimal hyperplasia in the longer term.

Clark J. A. M. Zeebregts, MD

Department of Surgery
Medisch Spectrum Twente
Enschede, The Netherlands

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Reply

We read with interest the comments made by Dr Zeebregts and would therefore like to clarify the main purpose of our study. Conventional anastomoses generate para-anastomotic flow disturbances on each side of the suture line, resulting in abnormal mechanical shear stress that may ultimately lead to endothelial cell loss, thereby initiating uncontrolled cellular proliferation. We compared the compliance profiles of continuous and interrupted sutured vascular anastomoses with those using nonpenetrating clips in the setting of acute nonrecovery in vivo experiments. It was therefore not relevant for us to record intimal thickness as a measure of intimal hyperplasia. Our main findings were that clipped anastomoses were quick and resulted in significantly better compliance profiles than continuous sutured anastomoses and similar profiles to those using interrupted sutures. However, there was significantly less acute endothelial injury seen in those using nonpenetrating clips. We therefore feel that the beneficial effects of both improved anastomotic compliance and reduced intimal damage may result in reduced intimal hyperplasia in the long term.

We also congratulate Dr Zeebregts and colleagues for their work comparing endothelial preservation of clipped and continuous sutured anastomoses. They showed that the use of nonpenetrating clips in vein patch closure of an arteriotomy preserves greater endothelial function than continuous sutured closure. Yet,